

REMARKS

Claim 30 has been canceled, and new claim 31 has been added. No new matter was added. Accordingly, claims 1, 11-29 and 31 remain pending. Independent claim 1 has been amended to distinguish over the prior art of record, and new independent claim 31 is submitted as distinguishing over the prior art of record. No new matter was added. Accordingly, Applicants respectfully submit that the present application is in condition for allowance.

I. Claim Rejections - 35 USC §103(a)

In the FINAL Office Action dated July 6, 2010, claims 1 and 11-30 are rejected under 35 USC §103(a) as being obvious over JP 11-011478 A in view of JP 11-350122 A and further in view of U.S. Patent No. 5,582,114 issued to Feiner.

The Cited Prior Art

The primary reference, JP '478, discloses a “double box container” for storing or shipping a plurality of “glass base sheets” (see Abstract of JP '478). Paragraph Nos. 0001 and 0002 of JP '478 explain that the glass base sheets are “glass substrates” for “display devices”, such as “liquid crystal display” and “plasma display” devices.

As best illustrated in FIGs. 3 and 4 of JP '478, the large glass display substrates are slid into the open top of the storage/transport box in a vertical orientation and are held in a vertical orientation by guide grooves (60) formed in opposite sidewalls (58) of the box. As best explained in the last sentence in Paragraph No. 0035 of JP '478, the “flute width” of each groove (60) is 10 to 25% greater in thickness than the glass substrate, and more preferably, 5 to 40% greater in thickness than the glass substrate. This large gap provided by the guide groove (60) enables free sliding of the large glass substrate (62) into the grooves (60), and as best explained

in Paragraph No. 0035 of JP '478, the guide groove (60) “plays the role of a mere guide”; hence, it is referred to as a “guide” groove (60).

Thus, it should be understood that the guide grooves (60) of JP '478 merely function to guide a plurality of separate glass sheets into the box such that the sheets are vertically oriented and spaced-apart. JP '478 makes clear to one of ordinary skill in the art that the guide grooves (60) provide no role with respect to supporting the glass substrates during transport and preventing damage of the glass substrates when the transport container is subject to impact.

Rather, “buffer members” (64) are located on the inner surface of the lid (56) of the box. See FIG. 3 and Paragraph Nos. 0035 and 0036 of JP '478. The buffer members (64) are thin strips of “elastic” material that extend transversely across the top edges of the plurality of spaced-apart glass substrates. The function of the buffer member (64) is to prevent sliding of the glass substrates within the box in an upward or downward direction as directed by the guide grooves (60).

Finally, JP '478 requires the opposite faces of the glass substrates to be untouched and spaced from other glass substrates and transport box materials so that the surfaces of the glass substrates remain free of dust and other contaminants. For example, Paragraph No. 0036 of JP '478 teaches to one of ordinary skill in the art that:

“... Since it is space between these glass substrates 62, the surface of the glass substrate 62 is not polluted. If it constitutes so that inactive gas, such as nitrogen gas, may be especially sprayed between the glass substrates 62, adhesion of the dust to the surface of the glass substrate 62 and garbage can be prevented efficiently.”

The secondary reference, JP '122, is cited merely for the purpose of disclosing a sputtering target. No transport box or like structure is disclosed.

The secondary reference, Feiner, discloses a “tiltable portable pallet” enabling man-powered “tiltable transport”.

The Rejection

In the Office Action, it is stated that “it would have been obvious to one of ordinary skill in the art to use the man-powered transport taught by Feiner in place of the forklift of Iwamoto et al. [JP ‘478]”.

In addition, the FINAL Office Action states that “Applicant has not pointed out how their claimed invention claims to overcome supposed damaging forces and thus has not pointed out the differences between the prior art combination and the claimed invention.” It is also stated in the FINAL Office Action that “it is noted that the features upon which applicant relies (i.e. no gaps being present) are not recited in the rejected claims.”

Argument for Non-obviousness

Applicants have amended independent claim 1 and present a new independent claim 31 and respectfully request reconsideration of the above referenced rejection.

Claim 1 of the present application has been amended to require a sputtering target transport box including a plate-shaped, disc-shaped sputtering target made of a metal or ceramic material and having first and second opposite planar faces and an outer annular peripheral edge. No new matter was added; for example, see the subject matter of former claim 30, the subject matter disclosed on page 1, lines 12-15, reference to a “void 15 the size of a target” on page 4, line 12, and “a target is inserted into a void 15” on page 6, line 12, and the shape of the void (15) illustrated in FIG. 1 of the present application, as filed. Claim 1 also requires an inner sputtering

target retention frame defining a void of a size matching a size and shape of the disc-shaped sputtering target with the sputtering target being positioned in the void such that the retention frame extends “continuously about, directly contacts and supports” said outer annular peripheral edge of the sputtering target in a manner preventing movement of the sputtering target relative to the retention frame. No new matter was added; for instance, since the void is the same size as the target, the retention frame will inherently be in intimate contact with the annular peripheral side edge of the target.

Claim 1 also requires a plastic inner box having a planar lower cushion plate and a planar upper cushion plate. No new matter was added; for example, see planar lower and upper cushion plates (12) and (13) as illustrated in FIG. 1 of the present application, as filed. The retention frame and sputtering target are positioned within the inner box sandwiched between the planar lower and upper cushion plates such that movement of said retention frame and sputtering target relative to said inner box is prevented. No new matter was added; for example, see page 4, lines 11-16, and FIG. 1 of the present application, as filed. The planar lower and upper cushion plates extend completely across and cover the void (see arrangement illustrated in FIG. 1 of the present application, as filed), and thus, inherently directly contact, cushion and buffer the first and second opposite planar faces of the sputtering target which is located in the void (15) which is of a size and shape that matches the sputtering target. Accordingly, the plate-shaped sputtering target is entirely encapsulated, cushioned, and in direct engagement with the retention frame and planar lower and upper cushion plates.

Further, claim 1 requires an outer box having an outer frame, a bottom plate, and a cover, and the inner box charged with the sputtering target is inserted in a horizontal position within the outer box for transport therein. The lower cushion plate is firmly held in position on the bottom

plate via the inner box and the upper cushion plate being firmly held in position via contact with the cover. No new matter was added; for example, see the arrangement illustrated in FIG. 1 of the present application, as filed.

During transport of the transport box including when the transport box is in a tilted state, a damaging force exerted on the transport box is buffered by the planar lower and upper cushion plates which are in turn supported by the bottom plate and the cover plate of the outer box, respectively. See page 4, lines 11-16, of the present application, as filed. Accordingly, the damaging force is prevented from being exerted on the first and second opposite faces and the peripheral side edge of the sputtering target contained within the transport box due to the presence of the planar lower and upper cushion plates and the retention frame adjacent the sputtering target and due to the intimate engagement of the planar lower and upper cushion plates and retention frame with the opposite planar faces and annular peripheral edge of the sputtering target.

New claim 31 includes many of the above referenced limitations. No new matter was added.

In JP '478, the object to be transported is a large glass substrate that is retained in a vertical position within the transport box (not a horizontal position as required by claims 1 and 31 of the present application or in a tilted position). The guide grooves (60) of JP '478 only loosely engage the peripheral side edges of the large glass substrates, and the "buffer members" (64) only engage the top edge of the glass substrates at spaced intervals. Further, JP '478 makes clear that the front and rear surfaces of the glass substrates should remain untouched without contact to other glass substrates or transport box components so as not to contaminate or pollute these exposed surfaces. Thus, it is clear from the written disclosure as well as the illustrations of

JP '478 that nothing supports, directly contacts, cushions, buffers or engages the front and rear major face surfaces of the large glass substrates of JP '478. Rather, there is space between each adjacent pair of glass substrates that may be filled with an "inactive gas" for the purpose of preventing contamination of the front and rear surfaces of the glass substrates. See Paragraph 0037 of JP '478.

Applicants respectfully submit that, if the pallet of JP '478 is tilted at an angle to the horizontal such that the large glass substrates are now tilted at an angle of about 45° or more to the horizontal, a significant force perpendicular to the unsupported front and rear face surfaces of the large glass substrates will be applied to the substrates due to gravity and the weight of the substrates. As stated above, JP '478 only provides "buffer members" (64) at the top edge of the large glass substrates (and possibly along the bottom edge), and there is no material buffering the overall front and rear major surfaces of the large glass substrates. Thus, the large glass substrates are not buffered or protected against forces that may be generated when the shipping container is tilted for "tilted transport" as is clearly required to make the stated combination with the prior art Feiner patent. Applicants respectfully submit that if the shipping container is subject to an impact, particularly a hard impact when the container is tilted, the force exerted on the large glass substrates will certainly result in damage to the unsupported front and rear surfaces of the large glass substrates of JP '478.

Accordingly, one of ordinary skill in the art would clearly be aware that "tilted transport" of the shipping box having a plurality of vertically disposed large glass substrates with unsupported major faces of JP '478 should be avoided. Thus, the disclosure of JP '478 inherently "teaches-away" from "tilted transport" and the addition of structure that would enable "tilted transport" could not be considered an obvious variation. "Teaching away" is the

antithesis of the art suggesting that the person of ordinary skill in the art go in the claimed direction. Essentially, “teaching away” is a per se demonstration of lack of obviousness. In re Fine, 873 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Also, when a §103 rejection is based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference, such a proposed modification is not proper and a *prima facie* case of obviousness cannot be properly made. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Here, the structure and the use of structure that would enable “tilted transport” of the shipping container of JP ‘478 would result in the damage of its contents (i.e. fragile large glass substrates of liquid crystal and plasma displays in which the front and rear faces of the substrates are required to be unsupported to prevent contamination). Thus, modifying JP ‘478 with the manual “tilted transport” of Feiner would destroy the intent, purpose and function of the invention of JP ‘478 which are directed to safely transporting and storing large glass substrates in a manner avoiding any contamination to the front and rear surfaces of the large glass substrates (i.e. the only thing touching the front and rear faces of the spaced-apart large glass substrates is an “inactive gas”). Tilted transport of the shipping container of JP ‘478 will result in forces being generated on the glass substrates that would cause damage to the substrates.

Further, there is no common sense desire to tilt a shipping container or modify a shipping container to make it tiltable when one of ordinary skill in the art is fully aware that such tilting action will lead to the creation of forces that will likely damage the expensive fragile contents (large glass substrates with unsupported front and rear faces) of the container.

Still further, the “guide grooves” (60) provided in the transport box of JP ‘478 are required to have a width greater than the thickness of the glass substrates to fulfill their intended

role. See Paragraph No. 0035 of JP '478. Nevertheless, with this kind of structure, one of ordinary skill in the art will recognize that there will be a gap remaining after the glass substrate is received in the guide grooves (60) and the glass substrate will clearly wobble and become unstable should the shipping container intentionally be positioned in a tilted position sufficient for man-powered transport on wheels.

For all of the above stated reasons, Applicants respectfully submit that it would not be obvious to one of ordinary skill in the art to modify the shipping container of JP '478 with the manual tilted transport capabilities of Feiner. Such a modification would result in the creation of forces that would damage the objects being transported and would be avoided by one of ordinary skill in the art. Also, the claims of the present application have been amended to distinguish over the above cited prior art.

Accordingly, Applicants respectfully request reconsideration and removal of the above stated conclusion with respect to obviousness and the rejection requiring JP '478 to be modified in view of Feiner.

With respect to the present invention, it should be understood that the fragile sputtering target is retained horizontally within the inner box and is required to be sandwiched between the "upper" and "lower" planar plates of the inner box. The retention frame of claim 1 of the present application is required to extend continuously about and support the outer peripheral edge of the sputtering target while the planar upper and lower plates of the inner box directly contact, cushion and buffer the opposite faces of the sputtering target.

There is no gap between the retention frame of the present invention and the peripheral edge of the sputtering target, and there is no gap between the planar faces of the sputtering target and the planar upper and lower plates of the inner box. See FIG. 1 of the present application.

Unlike JP '478, direct contact of the upper and lower plates with the faces of the sputtering target is required since the void of the retention frame is the same size and shape as the sputtering target and since the faces of the sputtering target are planar and since the lower and upper cushion plates are planar. In contrast, JP '478 directs one of ordinary skill in the art to avoid any direct contact with the faces of the glass substrates so as to prevent contamination.

Accordingly, since the entire surface of the sputtering target of the present invention is engaged and retained within the inner box of the present invention, the fragile sputtering target is in no danger of becoming damaged when the transport box is subject to tilted transport. This is not true with respect to the unsupported large faces of the glass substrates of JP '478, the primary reference. Thus, the cited combination of references clearly fails to disclose or render the present invention obvious to one of ordinary skill in the art.

For all of the above reasons, Applicants respectfully request reconsideration and removal of the §103(a) rejection of claims 1, 11-29 and 31 as being obvious over JP '478 in view of JP '122 and in further view of Feiner.

II. Conclusion

In view of the above amendments and remarks, Applicants respectfully submit that the claim rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

Respectfully submitted,
Howson & Howson LLP
Attorneys for Applicants

By /William Bak/
William Bak
Reg. No. 37,277
501 Office Center Drive
Suite 210
Fort Washington, PA 19034
(215) 540-9216